

## CLAIMS:

1. Lamp, preferably a Hg-free Lamp, whereby the lamp comprises electrodes (30) with a cylindrical section (50) and a head section (60) which are adjusted such that in the initial state during run-up of the lamp under 3.2 A run-up current the average increase of electrode tip temperature for the first 25 ms after lighting of the lamp is  $\leq 140$  K/ms and  
5  $\geq 3$  K/ms.
2. Lamp according to claim 1, whereby the lamp comprises an electrode rod (30) with a cylindrical section (50) and a head section (60) which are adjusted such that in the initial state during run-up of the lamp under 3.2 A run-up current the average increase  
10 of electrode tip temperature for the first 100 ms after lighting of the lamp is  $\leq 50$  K/ms and  $\geq 3$  K/ms.
3. Lamp according to Claim 1 or 2, whereby the maximum diameter of the head section (60) is larger than the maximum diameter of the cylindrical section (50).  
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4. Lamp according to Claim 3, whereby the maximum diameter of the cylindrical section (50) is between  $\geq 150\mu\text{m}$  and  $\leq 400\mu\text{m}$ , preferably between  $\geq 200\mu\text{m}$  and  $\leq 350\mu\text{m}$  and most preferred between  $\geq 250\mu\text{m}$  and  $\leq 300\mu\text{m}$ .
- 20 5. Lamp according to Claims 3 or 4, whereby the maximum diameter of the head section (60) is between  $\geq 250\mu\text{m}$  and  $\leq 800\mu\text{m}$ , preferably between  $\geq 350\mu\text{m}$  and  $\leq 600\mu\text{m}$  and most preferred between  $\geq 400\mu\text{m}$  and  $\leq 450\mu\text{m}$ .
- 25 6. Lamp according to any of the claims 3 to 5, whereby the head section (60) has a essentially spherical shape with preferred diameter of  $\geq 400$  and  $600\mu\text{m}$  or an essentially cylindrical shape with preferred diameter of  $\geq 250\mu\text{m}$  and  $\leq 500\mu\text{m}$ , preferably of  $\geq 320\mu\text{m}$  and  $\leq 420\mu\text{m}$  and a preferred length of  $\geq 400$  and  $\leq 1200\mu\text{m}$ .

7. The lamp according to any of the claims 1 to 6, characterized in that the maximum diameter of the head section (60) is of  $\geq 20\mu\text{m}$  and  $\leq 250\mu\text{m}$ , preferably of  $\geq 50\mu\text{m}$  and  $\leq 150\mu\text{m}$  larger than the maximum diameter of the cylindrical section (50).

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8. The lamp according to any of the claims 1 to 7, characterized in that the head section (60) has a longitudinal length of  $\geq 150\mu\text{m}$  and  $\leq 1500\mu\text{m}$ , preferably of  $\geq 400\mu\text{m}$  and  $\leq 1200\mu\text{m}$ .

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9. The lamp according to any of the claims 1 to 8, characterized in that the burner chamber is divided into two essentially semi-ellipsoidal sections (A and B) and a third section (C), whereas A covers the volume, which extends from one electrode tip along this electrode to the inner wall section of the burner chamber which contains the electrode; B covers the volume, which extends from the other electrode tip along this electrode to the inner wall section which contains the electrode and section C covers the remaining volume, which is the area between the electrodes, whereby

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- the sections A and B have essentially the same volume; and/or
- the total volume of the burner chamber is  $\geq 15\text{ mm}^3$  and  $\leq 30\text{ mm}^3$ , preferably  $\geq 19\text{ mm}^3$  and  $\leq 25\text{ mm}^3$  and most preferred  $\geq 21\text{ mm}^3$  and  $\leq 23\text{ mm}^3$ , and/or
- 20 - the total volume of at least one of the sections which extends from one electrode tip along this electrode to the inner wall section of the burner chamber which contains the electrode (A;B) is  $\geq 2\text{ mm}^3$  and  $\leq 3.5\text{ mm}^3$ , preferably  $\geq 2.4\text{ mm}^3$  and  $\leq 3.0\text{ mm}^3$  and most preferred  $\geq 2.5\text{ mm}^3$  and  $\leq 2.7\text{ mm}^3$ , and/or
- both sections A and B have a volume which is  $\geq 2\text{ mm}^3$  and  $\leq 3.5\text{ mm}^3$ , preferably  $\geq$  25  $2.4\text{ mm}^3$  and  $\leq 3.0\text{ mm}^3$  and most preferred  $\geq 2.5\text{ mm}^3$  and  $\leq 2.7\text{ mm}^3$ ; and/or
- the volume of the burner chamber between the two electrodes (C) is  $\geq 10\text{ mm}^3$  and  $\leq 25\text{ mm}^3$ , preferably  $\geq 13\text{ mm}^3$  and  $\leq 20\text{ mm}^3$  and most preferred  $\geq 15\text{ mm}^3$  and  $\leq 18\text{ mm}^3$ ; and/or
- the length of the electrodes inside the burner chamber (D) preferably is  $\geq 1.0\text{ mm}$  and 30  $\leq 4.0\text{ mm}$ , more preferably  $\geq 1.5\text{ mm}$  and  $\leq 3.0\text{ mm}$  and most preferred  $\geq 1.8\text{ mm}$  and  $\leq 2.3\text{ mm}$ .

10. A lamp according to one of the claims 1 to 9, being designed for the usage in one of the following applications: shop lighting, home lighting, head lamps, accent lighting, spot lighting, theatre lighting, consumer TV applications, fibre-optics  
5 applications, car lighting, and projection systems.